


Exhibit 2

Charted claim:
Method claim:1

US8515386B2	Uber App ("The accused instrumentality")
1. A method for determining the physical location of a VoIP phone and transmitting the physical location to an emergency services call center or the like, the method comprising:	<p>The accused instrumentality discloses a method (e.g., emergency assistance) for determining the physical location (e.g., current location) of a VoIP phone (e.g., smartphone with the accused instrumentality installed) and transmitting (e.g., automatically sending) the physical location (e.g., current or real-time location) to an emergency services call center (e.g., 911 call center) or the like.</p> <p>As shown, Uber app includes 911 emergency assistance feature. When user selects the 911 assistance feature, the current location of the user is determined by the accused instrumentality using location services such as GPS, Wi-fi, etc. and when user swipes the emergency button to call '911' emergency call center, the current location details of the user will be shared with them automatically.</p>

 Ride Drive Business Uber Eats About ▾

EN Help Log in


Do more in the apps

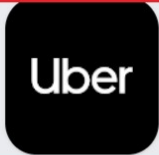

Uber is always available. So whenever you're ready to ride, drive, or get some food or other items delivered, all you have to do is open an Uber app. Let's download and get started.

Download the Uber app

Download the Driver app

<https://www.uber.com/us/en/download/>



	<div><div>Google Play Games Apps Movies & TV Books Children</div><div><div><div><div>Uber - Request a ride</div><div>Uber Technologies, Inc.</div></div></div><div><div><div>The developer has provided this information about how this app collects, shares and handles your data</div></div></div></div><div>https://play.google.com/store/apps/datasafety?id=com.ubercab&hl=en_IN&gl=US</div></div>
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Sharing details automatically

When a rider or driver uses the in-app emergency button to call emergency services, the car's make and model, license plate, and GPS location are made available to these private emergency services and security responders.

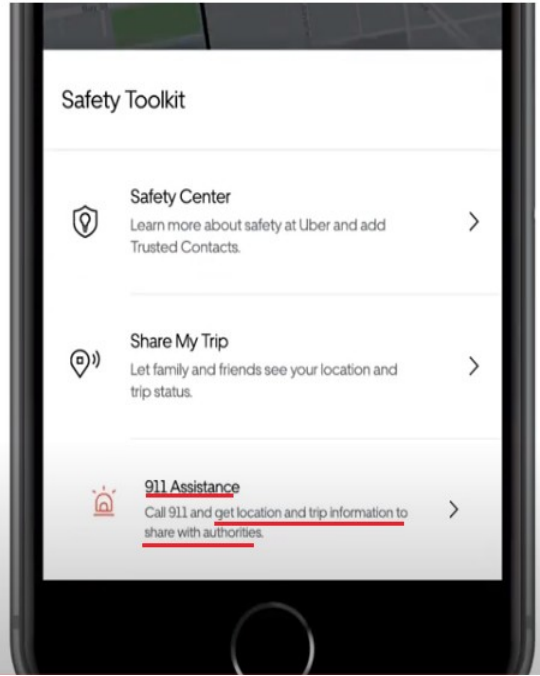
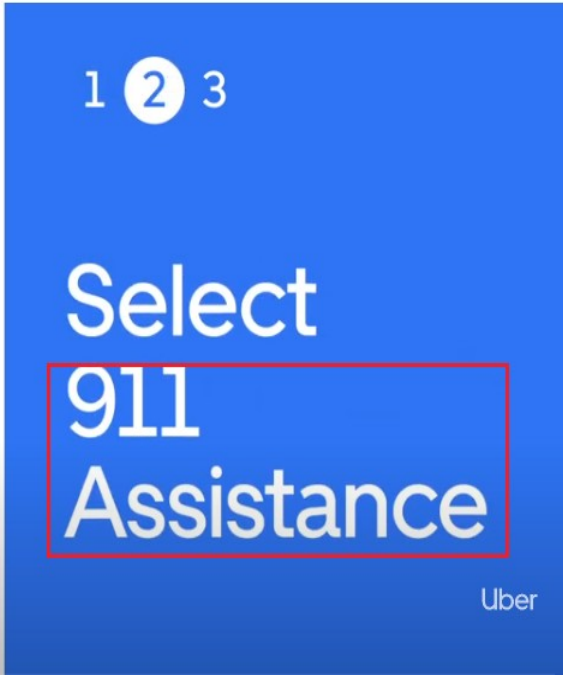
Working with emergency services and our partners, RapidSOS and Aura, we are excited for South Africa to be the first country outside of US and Canada to launch these new enhancements!

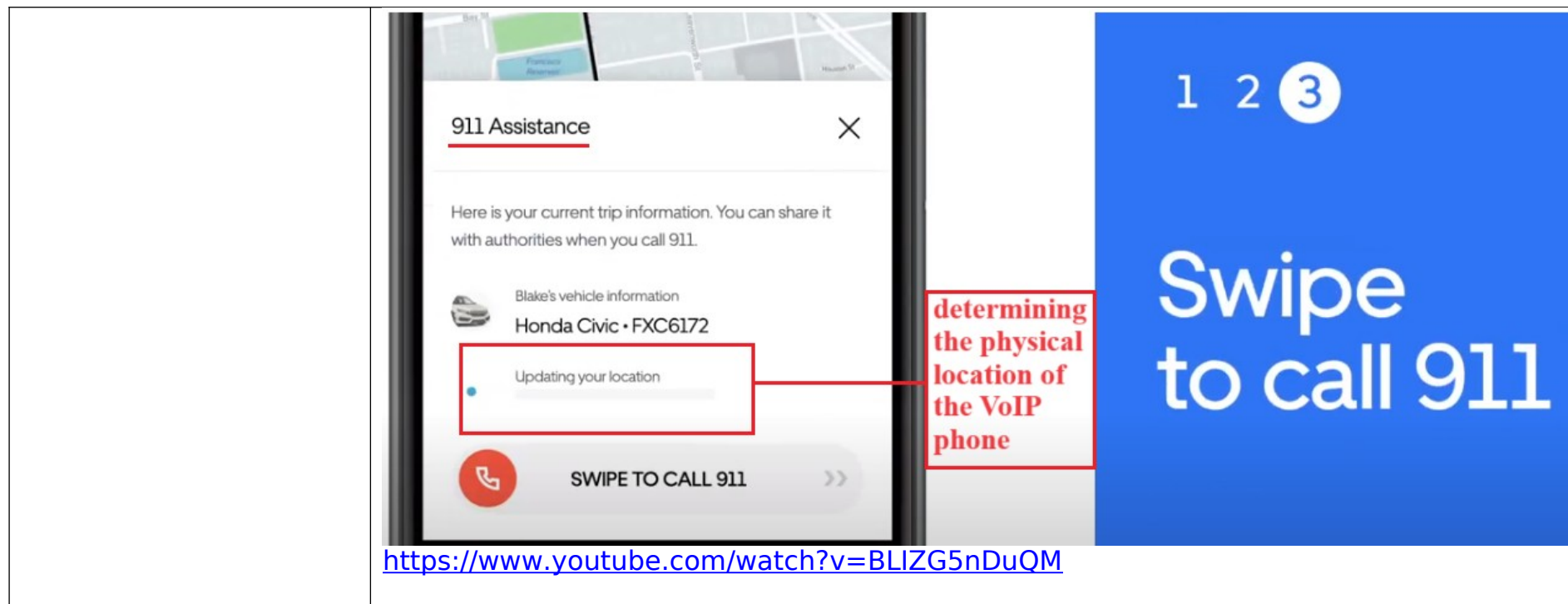
How it works

Riders and drivers can access the safety toolkit by tapping the shield icon on their app's map screen while on a trip. After tapping the Emergency Assistance feature, you will see your GPS location, car make and model, and license plate.

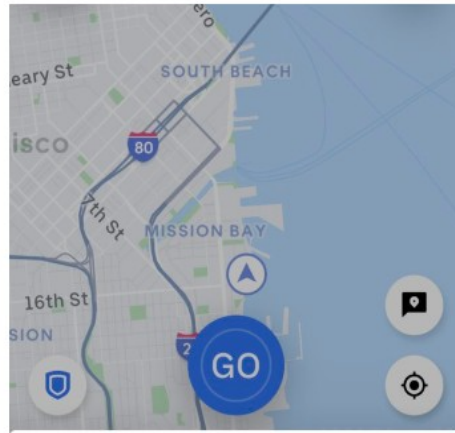
If you tap the "Call Security" button and connect to a private emergency services and security responder, those trip details become available to them digitally and can be used to respond to an emergency.

<https://www.uber.com/en-ZA/blog/ubers-emergency-button/>

	<div data-bbox="772 199 1310 877"></div> <div data-bbox="1467 199 2027 877"></div> <p data-bbox="638 869 1456 917">https://www.youtube.com/watch?v=BLIZG5nDuQM</p>
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After tapping the Emergency Assistance feature, you will see your GPS location, car make and model, and license plate. If you Swipe To Call 911 and connect to an emergency dispatcher, those trip details become available to them digitally in many US and Mexico cities, and can be used to facilitate an emergency response. Uber's support team will follow up with a check-in to make sure you are safe.

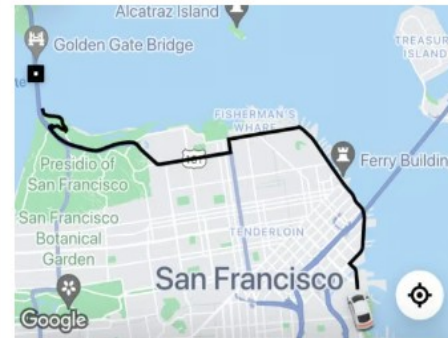


911 Assistance

You need to give 911 your location and vehicle details. [Change Sharing Settings](#)

Estimated Location
Terry A Francois Blvd & 16th St

→ Swipe To Call 911



911 Assistance

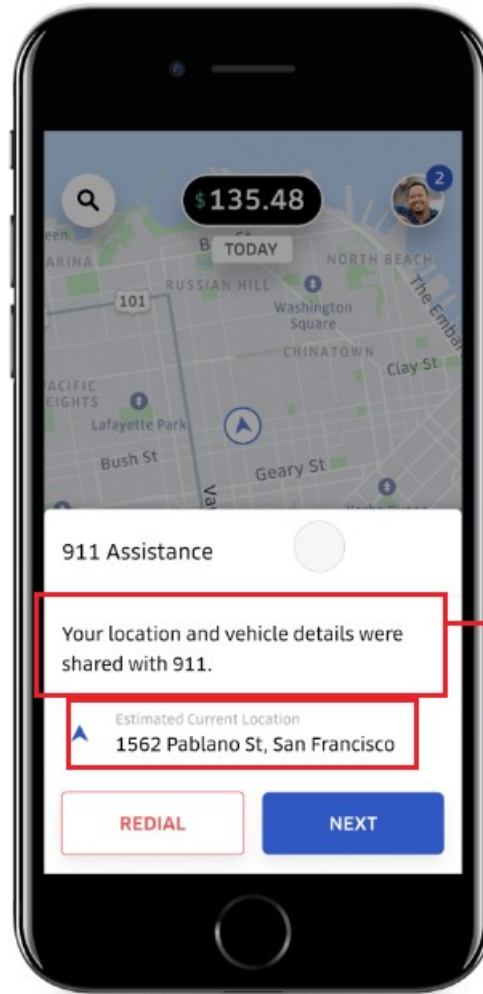
Your trip and contact details will be shared automatically when connecting with 911. [Change sharing settings](#)

Bruno's vehicle information
Dodge Caravan • CA12345

Estimated current location
Uber Mission Bay 3

→ Swipe to call 911

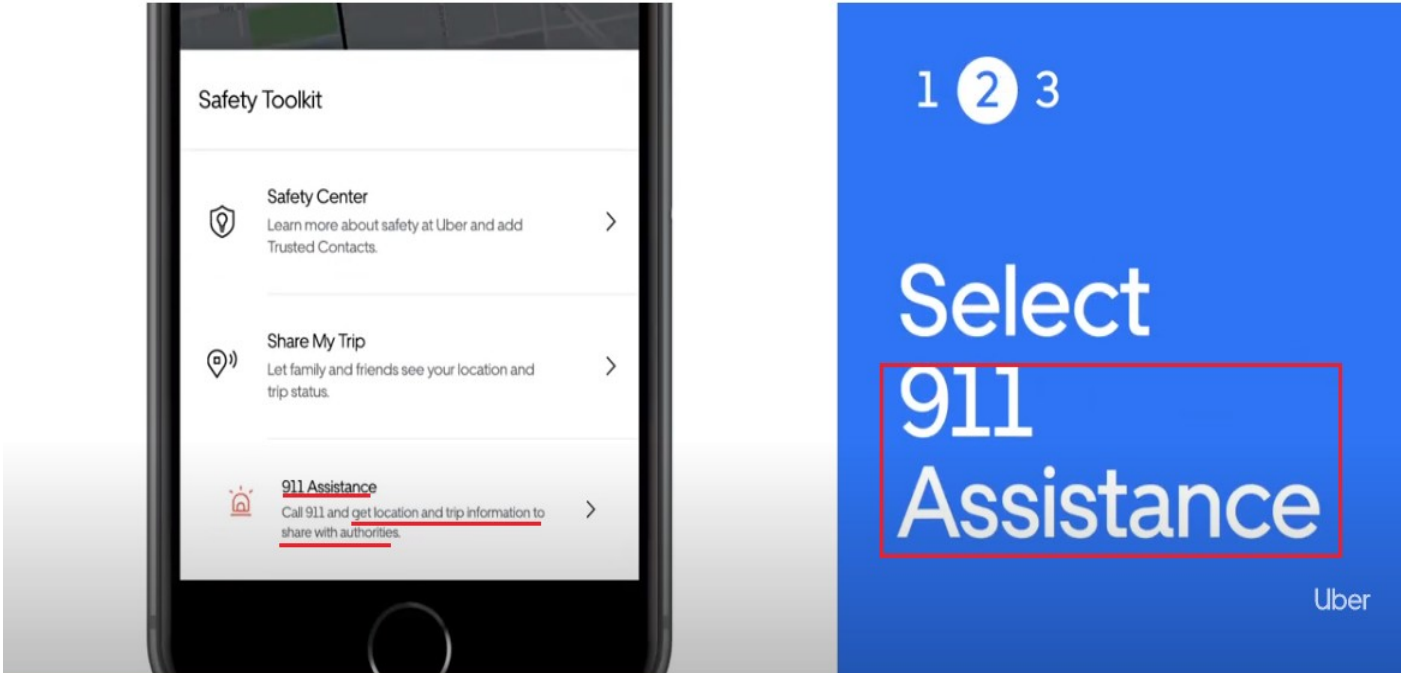
<https://www.uber.com/en-US/blog/ubers-emergency-button-and-the-technologies-behind-it/>

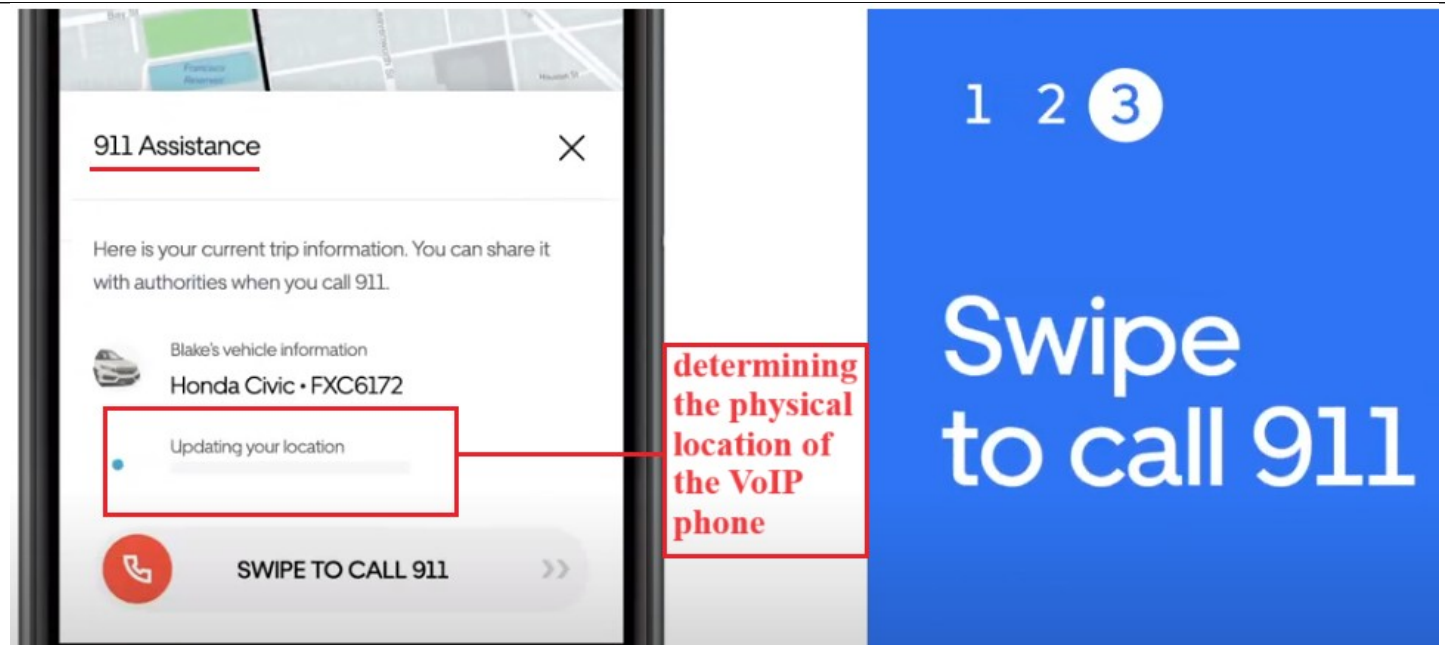


transmitting the
physical location
to an emergency
services call
center

<https://www.uber.com/newsroom/emergencybutton/>

<p>making a plurality of attempts to determine the physical location of the VoIP phone, each using a separate location detection technology (“LDT”):</p>	<p>The accused instrumentality discloses making a plurality of attempts (e.g., attempts corresponding to different location services such as GPS, Wi-fi, Bluetooth, etc.) to determine the physical location (e.g., current location) of the VoIP phone (smartphone with the accused instrumentality installed), each using a separate location detection technology (“LDT”) (e.g., location detection technologies such as GPS, Wi-fi, Bluetooth, etc.).</p> <p>As shown, Uber app includes 911 emergency assistance feature. When user selects the 911 assistance feature, plurality of attempts are made simultaneously to determine the current location of the user using various location detection technologies such as GPS, Wi-fi, Bluetooth, etc. The accused instrumentality uses device-based hybrid location to determine the accurate current location of the user device which combines the location information from smartphone sensors like GPS, wi-fi access points, Bluetooth beacons, etc. It also uses Reverse geocoding API and RapidSOS APIs to obtain real-time location of the device, where the reverse geocoder determines the location based on GPS location detection technology.</p>
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	 <p>The image shows a smartphone screen displaying the 'Safety Toolkit' app interface. The screen lists three options: 'Safety Center', 'Share My Trip', and '911 Assistance'. The '911 Assistance' option is highlighted with a red box. To the right of the phone screen is a blue overlay with the text 'Select 911 Assistance' and the Uber logo. The number '2' is circled in the top right corner of the blue overlay.</p> <p>https://www.youtube.com/watch?v=BLIZG5nDuQM</p>
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<https://www.youtube.com/watch?v=BLIZG5nDuQM>

rely on a network-centric approach to identify a 9-1-1 caller's location. The reason apps like Uber can identify exactly where we are is because they use device-based hybrid location.

https://blog.motorolasolutions.com/en_us/new-9-1-1-technology-enables-accurate-and-automatic-location-data/

Tests with RapidSOS and Motorola Solutions call handling software have shown that device-based hybrid location indeed provides more accurate location information because it combines the smartphone sensors including: GPS, Wi-Fi access points, Bluetooth beacons, barometric pressure, pedestrian dead reckoning, gyro sensors, accelerometers and more.

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911 Communications Technology

Accurate Address Info (Reverse Geocoding)

Reverse geocoding is the technology that converts a GPS location (latitude and longitude) to a readable address or place. On the Emergency Button screen, the mobile client calls the backend reverse geocoding API at a regular cadence to display the current location in the app.

<https://www.uber.com/en-US/blog/ubers-emergency-button-and-the-technologies-behind-it/>

signals. Predictions account for ~50% of destinations entered. The reverse geocoder determines the user's location based on GPS, which we augment with additional information for suggested Uber pickup spots based on our overall trip history.

<https://www.uber.com/en-US/blog/tech-stack-part-one-foundation/>

How Uber uses rider location information

You'll see a request prompted by your device for permission to share your location information when you sign up for Uber, which includes location data collected via Bluetooth and nearby wifi signals. For the best service available, the app by default asks you to turn on location services "while using the app" using "precise location."

We use location data to:

- Find drivers that are near you and help them navigate to your pickup spot
- Display trip history in your receipts
- Understand and resolve support tickets
- To troubleshoot and solve software bugs

<https://help.uber.com/am/riders/article/how-uber-uses-rider-location-information?nodeId=741744cb-125c-4efc-ab3f-4a977940ac87>

Location and navigation using global positioning systems (GPS) is deeply embedded in our daily lives, and is particularly crucial to Uber's services. To orchestrate quick, efficient pickups, our GPS technologies need to know the locations of matched riders and drivers, as well as provide navigation guidance from a driver's current location to where the rider needs to be

<https://www.uber.com/en-US/blog/ubers-emergency-button-and-the-technologies-behind-it/>

As shown below, the accused instrumentality utilizes different location technologies (e.g., LDTs) such as GPS, Cell tower, Wi-Fi signals, etc., to determine a precise current location of the device.

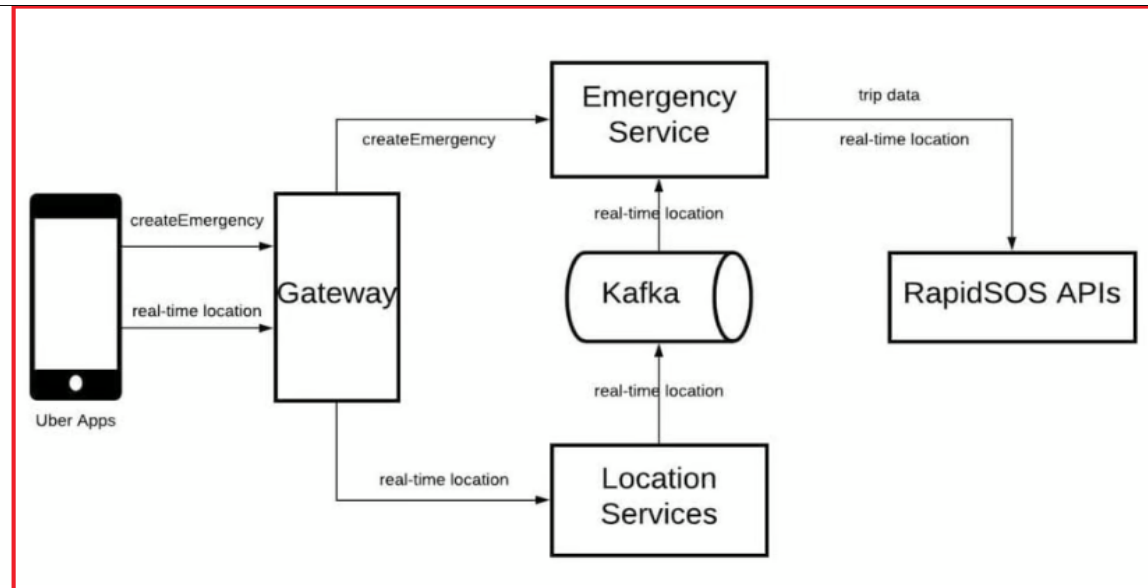


Figure 4: Emergency Service receives streamed real-time location updates and forward to RapidSOS by calling RapidSOS APIs

When someone taps the emergency button in the app, the mobile client makes a request to the Emergency backend service through a gateway proxy. Emergency Service then delivers trip data to the RapidSOS API. At the same time, the location worker on the mobile client collects and uploads location data to location services every few seconds. These real-time location updates are streamed to the Emergency Service through Kafka. Emergency Service makes HTTP requests to RapidSOS' Location API continuously to deliver real-time location data. We take users' privacy seriously, and so the system strictly respects users' permission to share trip and location information with third parties, such as RapidSOS and the authorities.

<https://www.uber.com/en-US/blog/ubers-emergency-button-and-the-technologies-behind-it/>


Google and RapidSOS Now Provide Emergency Location for 911 Calls Nationwide

by RapidSOS Team | All


[vc_row][vc_column][vc_column_text]Today we are excited to announce that RapidSOS and Google have launched Android Emergency Location Service (ELS) in the U.S. This allows Android devices to send faster, more accurate 911 caller location to 911 communications centers nationwide – all through the secure RapidSOS Clearinghouse.

<https://rapidsos.com/our-latest/google-and-rapidsos-partner/>

How device location works

Depending on your device settings, Android devices estimate location by using different inputs, including GPS, sensors (such as accelerometer, gyroscope, magnetometer, and barometer), mobile network signals, and Wi-Fi signals. These inputs can be used to estimate the most accurate location possible, which is provided to apps and services on the device that have the required permissions. [Learn more about your Android device's location settings](#) .

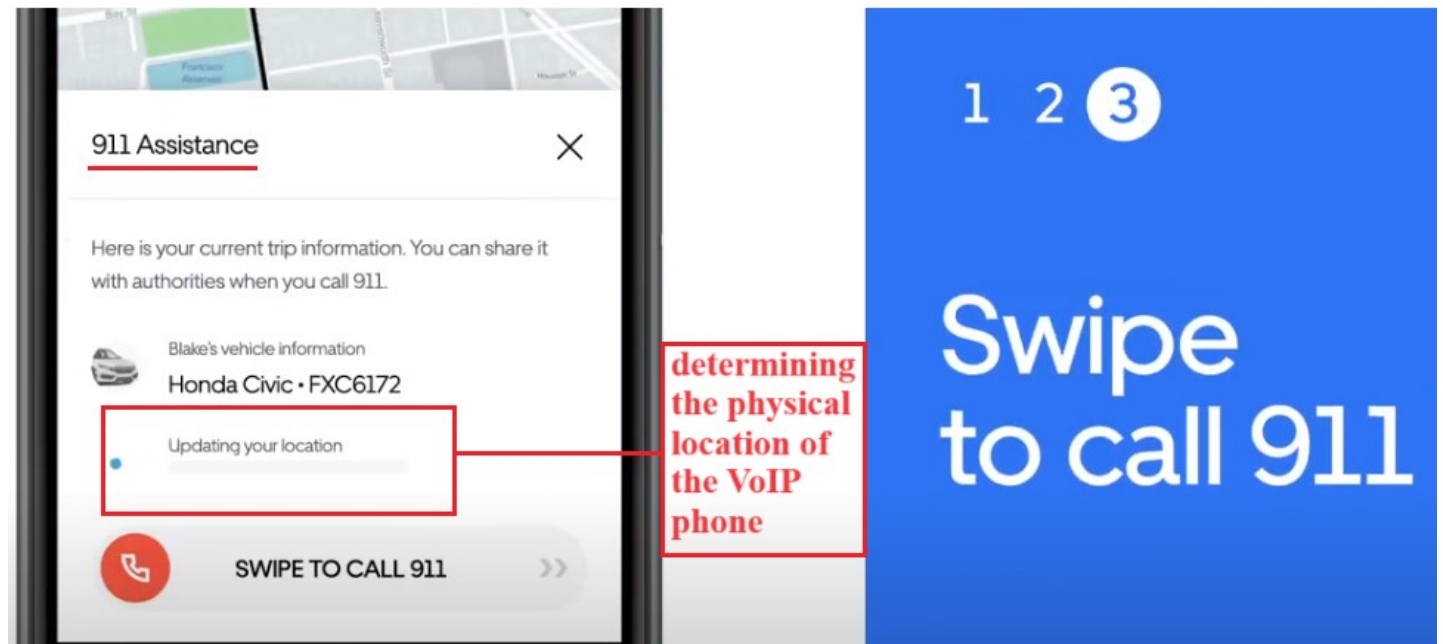
Mobile and Wi-Fi network signals can help Android estimate the device's location, especially in environments where GPS signals aren't available or accurate, including in <https://policies.google.com/technologies/location-data?hl=en>

	<div data-bbox="651 209 853 229">Emergency Location Service</div> <div data-bbox="1794 209 1872 229">Overview</div> <div data-bbox="1906 209 2007 229">How it works</div> <div data-bbox="757 261 1160 442"> <h2><u>ELS uses FLP to determine the user's location.</u></h2> </div> <div data-bbox="757 507 1202 1106"> <p>The Android device automatically activates ELS. ELS uses the Fused Location Provider (FLP) to fuse location signals from cell towers, GPS, Wi-Fi and sensors on the phone to compute accurate location data, whether the caller is indoors or outdoors.</p> </div> <div data-bbox="627 1112 2011 1187"> <p>https://www.android.com/safety/emergency-help/emergency-location-service/how-it-works/</p> </div> <div data-bbox="1456 419 2011 987">  </div>
<p>if an attempt is successful, storing the physical location determined using the</p>	<p>The accused instrumentality discloses if an attempt (e.g., attempt to obtain current location of the user smartphone enabled with accused instrumentality) is successful (e.g., current location updated), storing the physical location determined (e.g., determined current location) using the corresponding LDT (e.g., GPS, Wi-fi, Bluetooth,</p>

corresponding LDT;

etc.).

As shown, Uber app includes 911 emergency assistance feature. When user selects the 911 assistance feature, plurality of attempts are made simultaneously to determine the current location of the user using various location detection technologies such as GPS, Wi-fi, Bluetooth, etc. The accused instrumentality use device based hybrid location to determine the accurate current location of the user device which combines the location information from smartphone sensors like GPS, wi-fi access points, Bluetooth beacons, etc. It also uses Reverse geocoding API and RapidSOS APIs to obtain real-time location of the device, where the reverse geocoder determines the location based on GPS location detection technology. Upon successfully determining the current GPS location of the user, the accused instrumentality stores the current updated location to the servers located in their data centers.



<https://www.youtube.com/watch?v=BLIZG5nDuQM>

How Uber uses rider location information

You'll see a request prompted by your device for permission to share your location information when you sign up for Uber, which includes location data collected via Bluetooth and nearby wifi signals. For the best service available, the app by default asks you to turn on location services "while using the app" using "precise location."

We use location data to:

- Find drivers that are near you and help them navigate to your pickup spot
- Display trip history in your receipts
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- To troubleshoot and solve software bugs

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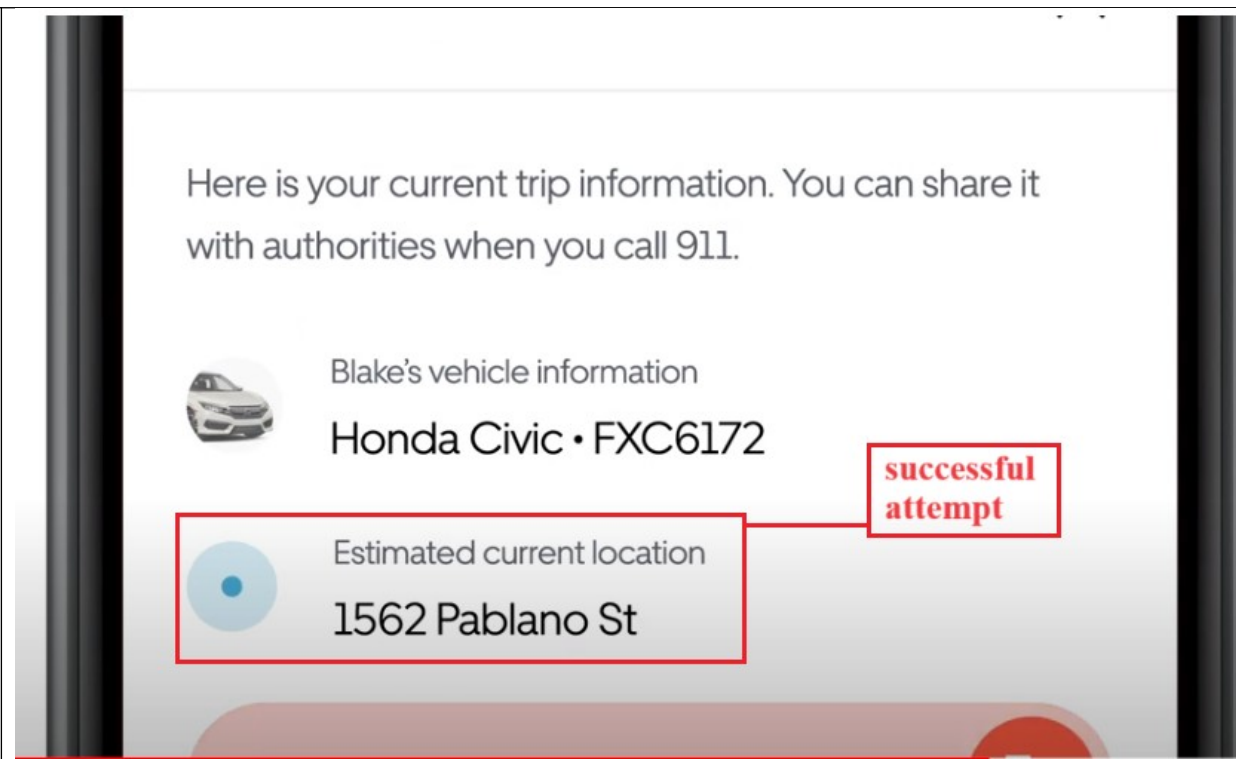
Tests with RapidSOS and Motorola Solutions call handling software have shown that device-based hybrid location indeed provides more accurate location information because it combines the smartphone sensors including: GPS, Wi-Fi access points, Bluetooth beacons, barometric pressure, pedestrian dead reckoning, gyro sensors, accelerometers and more.

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Location and navigation using global positioning systems (GPS) is deeply embedded in our daily lives, and is particularly crucial to Uber's services. To orchestrate quick, efficient pickups, our GPS technologies need to know the locations of matched riders and drivers, as well as provide navigation guidance from a driver's current location to where the rider needs to be <https://www.uber.com/en-US/blog/rethinking-gps/>

After tapping the Emergency Assistance feature, you will see your GPS location, car make and model, and license plate. If you **Swipe To Call 911** and connect to an emergency dispatcher, those trip details become available to them digitally in many US and Mexico cities, and can be used to facilitate an emergency response. Uber's support team will follow up with a check-in to make sure you are safe.

<https://www.uber.com/en-US/blog/ubers-emergency-button-and-the-technologies-behind-it/>



<https://www.youtube.com/watch?v=BLIZG5nDuQM>

2. Data created during use of our services. This includes:

- Location data (driver and delivery person): We collect precise and approximate location data from drivers' and delivery persons' mobile devices when the Uber app is running in the foreground (app open and on-screen) or background (app open but not on-screen).
- Location data (riders and order recipients): We collect precise and/or approximate location information from riders' and order recipients' mobile devices if they enable us to do so via their device settings.


<https://www.uber.com/legal/en/document/?name=privacy-notice&country=india&lang=en>

As shown below, the accused instrumentality utilizes different location technologies

(e.g., LDTs) such as GPS, Cell tower, Wi-Fi signals, etc., to determine a precise current location of the device. If at a location, GPS signals and Wi-Fi signals are not available (e.g., unsuccessful attempts for the LDTs), it can determine location using cell tower signals (e.g., successful attempt for LDT).

By using location information from different LDTs (e.g., storing successful location information from LDTs), the accused instrumentality determines a precise location of the device.

How device location works

Depending on your device settings, Android devices estimate location by using different inputs, including GPS, sensors (such as accelerometer, gyroscope, magnetometer, and barometer), mobile network signals, and Wi-Fi signals. These inputs can be used to estimate the most accurate location possible, which is provided to apps and services on the device that have the required permissions. [Learn more about your Android device's location settings](#) .

Mobile and Wi-Fi network signals can help Android estimate the device's location, especially in environments where GPS signals aren't available or accurate, including in <https://policies.google.com/technologies/location-data?hl=en>

Emergency Location Service

Overview

How it works

ELS uses FLP to determine the user's location.

The Android device automatically activates ELS. ELS uses the Fused Location Provider (FLP) to fuse location signals from cell towers, GPS, Wi-Fi and sensors on the phone to compute accurate location data, whether the caller is indoors or outdoors.

<https://www.android.com/safety/emergency-help/emergency-location-service/how-it-works/>



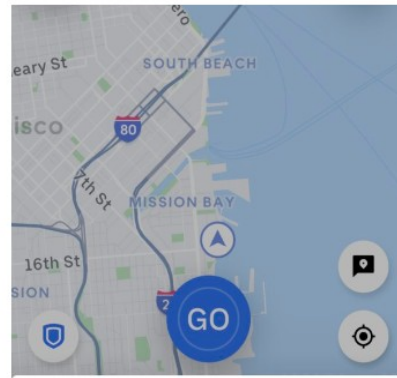
	<p><u>What Databases Uber used to use?</u></p> <p>Earlier they have used RDBMS to <u>save profile-related data and GPS points</u> and everything. But they identified they couldn't scale when they got more and more users as well as cities. Then they moved to <u>NoSQL databases</u> that are built on top of MYSQL something called schemaless. They considered about</p> <ul style="list-style-type: none"> • Horizontally scalable — You can add multiple nodes in different regions and altogether acts as one database • Write and the Read availability — every 4-sec cab will be sending the GPS location to the database. So that there are tons of reading and write happens to the system. • No downtime — The system will be always available and what uber adds or remove from the system or while they are doing some maintenance for the system then the system should be up and there should be no downtime. • <u>Nearest datacenters</u> — When they add new cities to the system they try to <u>add new data centers or else they store data on the nearest datacenters to the newly added city to give the seamless service.</u> <p>https://medium.com/nerd-for-tech/uber-architecture-and-system-design-e8ac26690dfc</p>
<p>placing a call to the emergency services call center with the VoIP phone; and</p>	<p>The accused instrumentality discloses placing a call (e.g., swiping to call 911) to the emergency services call center (e.g., 911 call center) with the VoIP phone (e.g., smartphone with the accused instrumentality installed).</p> <p>As shown, Uber app includes 911 emergency assistance feature. When user selects the 911 assistance feature, an emergency button to call '911' is displayed using which user</p>

can place a call to 911 emergency call center using his smartphone having uber app installed.

How to: Call 911 from the Uber app

<https://www.youtube.com/watch?v=BLIZG5nDuQM>

After tapping the Emergency Assistance feature, you will see your GPS location, car make and model, and license plate. If you Swipe To Call 911 and connect to an emergency dispatcher, those trip details become available to them digitally in many US and Mexico cities, and can be used to facilitate an emergency response. Uber's support team will follow up with a check-in to make sure you are safe.

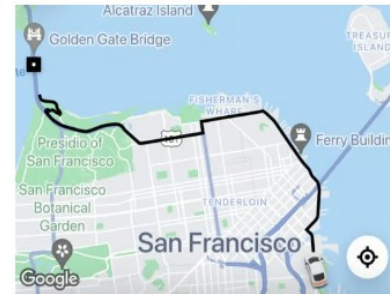


911 Assistance

You need to give 911 your location and vehicle details. [Change Sharing Settings](#)

Estimated Location
Terry A Francois Blvd & 16th St

→ Swipe To Call 911



911 Assistance

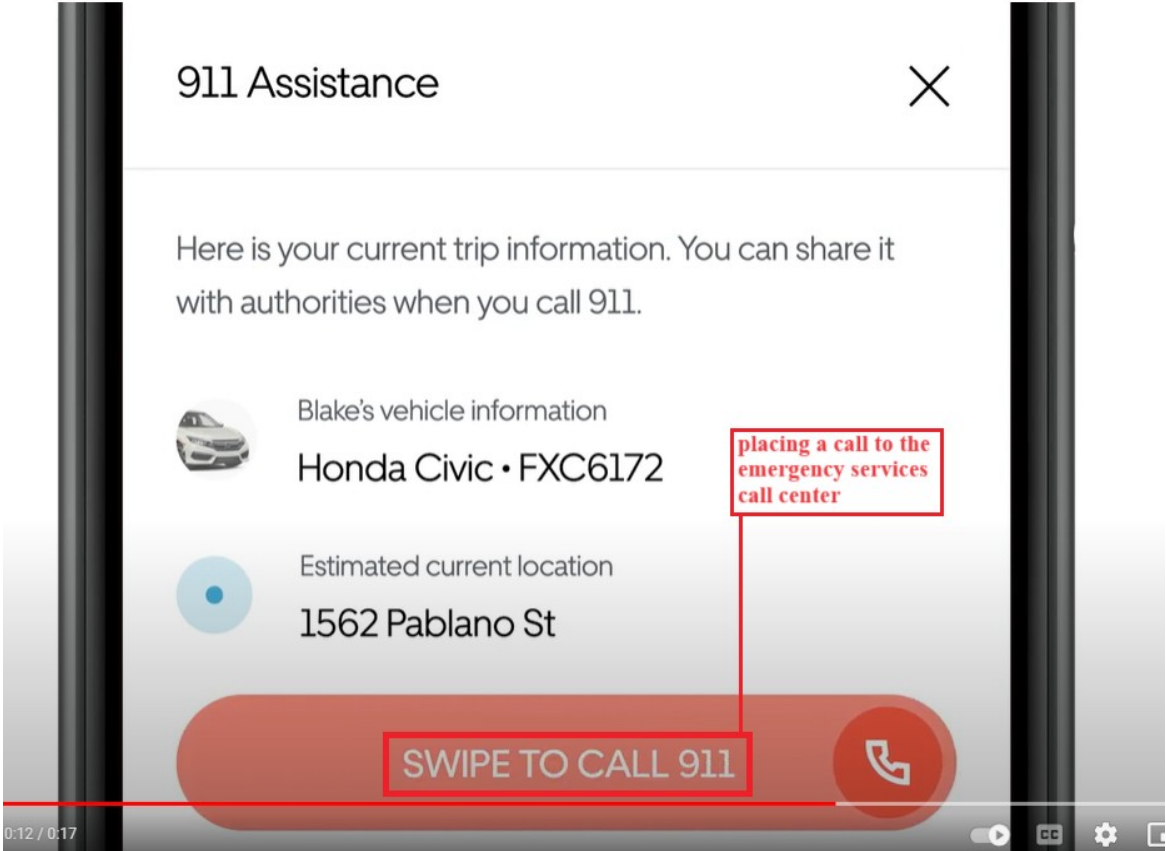
Your trip and contact details will be shared automatically when connecting with 911. [Change sharing settings](#)

Bruno's vehicle information
Dodge Caravan • CA12345

Estimated current location
Uber Mission Bay 3

→ Swipe to call 911

<https://www.uber.com/en-US/blog/ubers-emergency-button-and-the-technologies-behind-it/>

	 <p>911 Assistance</p> <p>Here is your current trip information. You can share it with authorities when you call 911.</p> <p>Blake's vehicle information Honda Civic • FXC6172</p> <p>Estimated current location 1562 Pablano St</p> <p>SWIPE TO CALL 911</p> <p>placing a call to the emergency services call center</p> <p>0:12 / 0:17</p> <p>https://www.youtube.com/watch?v=BLIZG5nDuQM</p>
<p>automatically transmitting the physical location of the VoIP phone to the emergency services call center.</p>	<p>The accused instrumentality discloses automatically transmitting (e.g., automatically sending) the physical location (e.g., current location) of the VoIP phone (e.g., smartphone with the accused instrumentality installed).to the emergency services call center (e.g., '911' emergency call center).</p> <p>As shown, Uber app includes 911 emergency assistance feature. When user selects the</p>

911 assistance feature, the current location of the user is determined by the accused instrumentality using location services such as GPS, Wi-fi, etc. and when user swipes the emergency button to call '911' emergency call center, the current location details of the user will be shared with them automatically.

Sharing details automatically

When a rider or driver uses the in-app emergency button to call emergency services, the car's make and model, license plate, and GPS location are made available to these private emergency services and security responders.

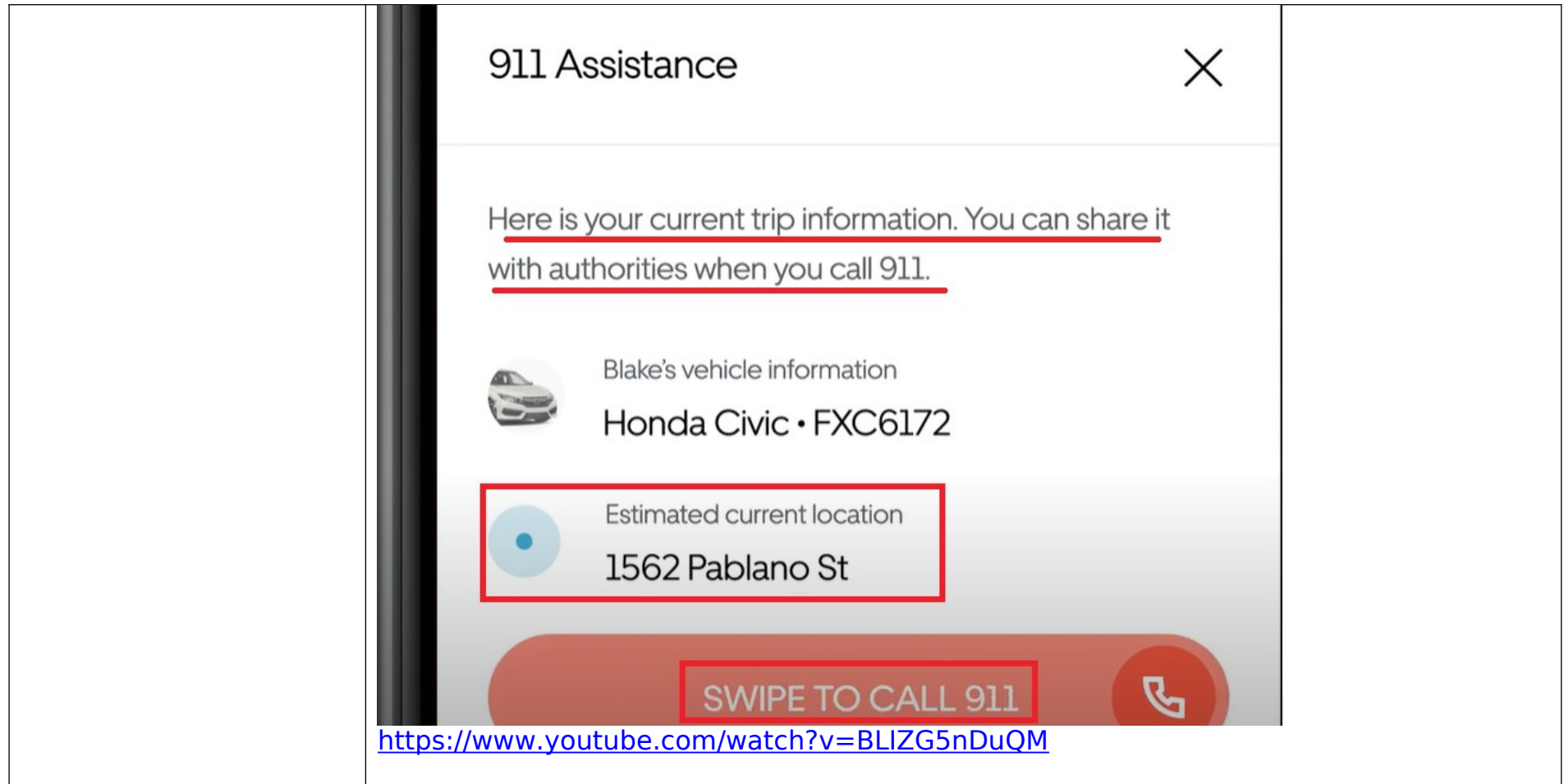
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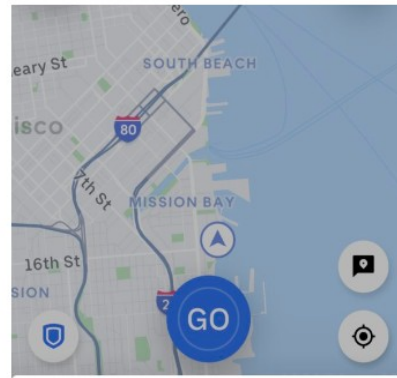
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<https://www.uber.com/en-ZA/blog/ubers-emergency-button/>



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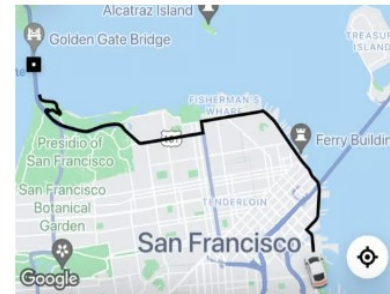


911 Assistance

You need to give 911 your location and vehicle details. [Change Sharing Settings](#)

Estimated Location
Terry A Francois Blvd & 16th St

→ Swipe To Call 911



911 Assistance

Your trip and contact details will be shared automatically when connecting with 911. [Change sharing settings](#)

Bruno's vehicle information
Dodge Caravan • CA12345

Estimated current location
Uber Mission Bay 3


→ Swipe to call 911

<https://www.uber.com/en-US/blog/ubers-emergency-button-and-the-technologies-behind-it/>


911 Assistance

×

Here is your current trip information. You can share it with authorities when you call 911.




Blake's vehicle information
Honda Civic • FXC6172







Estimated current location
1562 Pablano St

SWIPE TO CALL 911

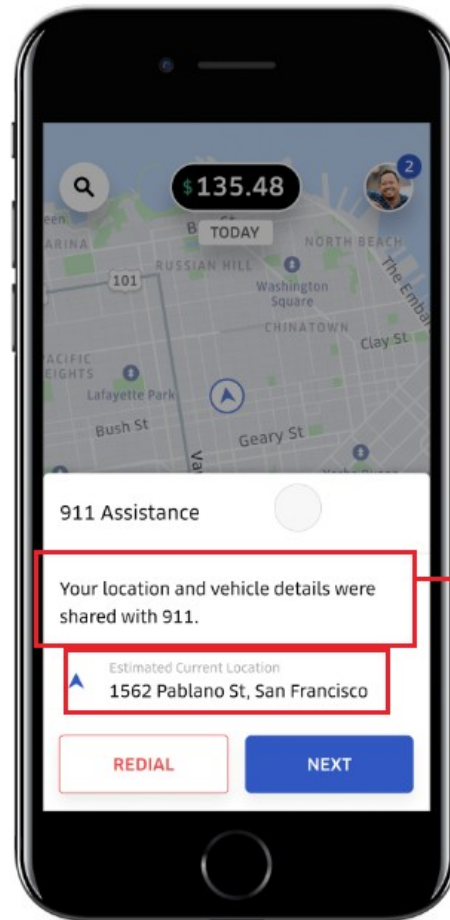


0:12 / 0:17



placing a call to the emergency services call center

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**automatically
transmitting the
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of the VoIP
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services call
center**

<https://www.uber.com/newsroom/emergencybutton/>